FORM PTO-1390 (Modified) (REV 11-2000) U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371

ATTORNEY'S DOCKET NUMBER	
02-097	
U S APPLICATION NO. (IF KNOWN, SEE 37 CFR)	
10/069428	

INTERNATIONAL APPLICATION NO	INTERNATIONAL FILING DATE	PRIORITY DATE CLAIMED
PCT/ZA00/00140	18 August 2000	19 August 1999

TITLE OF INVENTION
Encapsulated Transformer

APPLICANT(S) FOR DO/EO/US
Branimir Jakovlejvic

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☐ This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include itens (5), (6), (9) and (24) indicated below.
4. ☒ The US has been elected by the expiration of 19 months from the priority date (Article 31).
5. ☒ A copy of the International Application as filed (35 U.S.C. 371 (c) (2))
   a. ☐ is attached hereto (required only if not communicated by the International Bureau).
   b. ☒ has been communicated by the International Bureau.
   c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☐ An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).
   a. ☐ is attached hereto.
   b. ☐ has been previously submitted under 35 U.S.C. 154(d)(4).
7. ☐ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c)(3))
   a. ☐ are attached hereto (required only if not communicated by the International Bureau).
   b. ☐ have been communicated by the International Bureau.
   c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
   d. ☐ have not been made and will not be made.
8. ☐ An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☐ An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)).
10. ☒ An English language translation of the annexes of the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)).
11. ☒ A copy of the International Preliminary Examination Report (PCT/IPEA/409).
12. ☒ A copy of the International Search Report (PCT/ISA/210).

Items 13 to 20 below concern document(s) or information included:

13. ☐ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
14. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
15. ☒ A **FIRST** preliminary amendment.
16. ☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
17. ☐ A substitute specification.
18. ☐ A change of power of attorney and/or address letter.
19. ☐ A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825.
20. ☐ A second copy of the published international application under 35 U.S.C. 154(d)(4).
21. ☐ A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4).
22. ☐ Certificate of Mailing by Express Mail
23. ☒ Other items or information:

Return Postcard;
Redlined and Clean Version of Amended Claims;
Patent Application Data Sheet.

U.S. APPLICATION NO (IF KNOWN, SEE 37 CFR)	INTERNATIONAL APPLICATION NO.	ATTORNEY'S DOCKET NUMBER
10/069428	PCT/ZA00/00140	02-097

24. The following fees are submitted:.	CALCULATIONS PTO USE ONLY
BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)) :	
☐ Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO **$1000.00**	
☒ International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO **$860.00**	
☐ International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO **$710.00**	
☐ International preliminary examination fee (37 CFR 1.482) paid to USPTO but all claims did not satisfy provisions of PCT Article 33(1)-(4) **$690.00**	
☐ International preliminary examination fee (37 CFR 1.482) paid to USPTO and all claims satisfied provisions of PCT Article 33(1)-(4) **$100.00**	
ENTER APPROPRIATE BASIC FEE AMOUNT =	**$860.00**
Surcharge of **$130.00** for furnishing the oath or declaration later than ☐ 20 ☒ 30 months from the earliest claimed priority date (37 CFR 1.492 (e)).	**$130.00**

CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE	
Total claims	15 - 20 =	0	x $18.00	**$0.00**
Independent claims	2 - 3 =	0	x $80.00	**$0.00**
Multiple Dependent Claims (**check if applicable**).			☐	**$0.00**
TOTAL OF ABOVE CALCULATIONS =				**$990.00**
☒ Applicant claims small entity status. (See 37 CFR 1.27). The fees indicated above are reduced by 1/2.				**$495.00**
SUBTOTAL =				**$495.00**
Processing fee of **$130.00** for furnishing the English translation later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492 (f)). +				**$0.00**
TOTAL NATIONAL FEE =				**$495.00**
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31) (**check if applicable**). ☐				**$0.00**
TOTAL FEES ENCLOSED =				**$495.00**
				Amount to be: refunded $
				charged $

a. ☒ A check in the amount of **$495.00** to cover the above fees is enclosed.

b. ☐ Please charge my Deposit Account No. _____ in the amount of _____ to cover the above fees. A duplicate copy of this sheet is enclosed.

c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. **13-2490** A duplicate copy of this sheet is enclosed.

d. ☐ Fees are to be charged to a credit card. **WARNING:** Information on this form may become public. **Credit card information should not be included on this form.** Provide credit card information and authorization on PTO-2038.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

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Patrick G. Gattari
NAME

39,682
REGISTRATION NUMBER

February 19, 2002
DATE

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
(MBHB Case No. 02-097)

Application of:	Branimir Jakovlejvic	)
Serial No.:	Not Yet Assigned	)
U.S. Nat'l Phase of PCT/ZA00/00140		) Group Art Unit: unassigned
Filing Date:		) Examiner: unassigned
Int'l Filing Date	August 18, 2000	)
Title:	Encapsulated Transformer	)

Commissioner of Patents
Washington, DC 20231

PRELIMINARY AMEDMENT

Dear Sir:

Prior to examination of the above-referenced application, please enter the following Amendment.

AMENDMENT

In the Claims:

Please amend claims 1-15 as indicted below.

A marked-up version of the claims is attached as Appendix A.

1. (Amended) An electric assembly comprising a transformer and a translucent electricity insulating permanent cover therefor, to transmit heat generated by the transformer outwardly.

2. (Amended) An assembly as claimed in claim 1 wherein the cover is transparent.

3. (Amended) An assembly as claimed in claim 1 wherein the transformer comprises a transparent bobbin on which a core for the transformer and transformer windings are provided.

CERTIFICATE OF MAILING

I hereby certify that this document is being deposited with the United States Postal Service as U.S. Express Mail Number EL602854309US in an envelope addressed to: Commissioner for Patents, Washington, DC 20231 on this 19th day of February, 2002.

Jill Alvarez

4. (Amended) An assembly as claimed in claim 1 wherein the cover is in the form of a skin.

5. (Amended) An assembly as claimed in claim 4 wherein the skin comprises a transparent outer shell of a rigid material and a layer of a transparent filling material provided between the shell and the transformer.

6. (Amended) An assembly as claimed in claim 5 wherein the shell comprises first and second body halves fitted together to form the shell.

7. (Amended) An assembly as claimed in claim 4 wherein the skin comprises outwardly extending protrusions, to provide a clearance between the skin and a surface on which the assembly is mounted in use.

8. (Amended) An assembly as claimed in claim 1 wherein the cover comprises a plurality of pins for mating with and making electrical contract with a conventional socket arrangement.

9. (Amended) An assembly as claimed in claim 8 wherein the transformer forms part of power supply circuitry, the power supply circuitry comprising a first output which is accessible through the cover.

10. (Amended) An assembly as claimed in claim 9 wherein the power supply circuitry comprises a second output which is in parallel with the first output and also accessible through the cover.

11. (Amended) An assembly as claimed in claim 9 wherein the circuitry comprises a fuse and the fuse is provided in a recess in the cover.

12. (Amended) An assembly as claimed in claim 11 wherein the cover comprises a lid for opening and closing the recess.

13. (Amended) A method of forming an electric assembly, the method comprising the steps of:

- providing a transformer; and
- permanently enclosing the transformer in a translucent electricity insulating cover which, in use, transmits heat generated by the transformer.

14. (Amended) A method as claimed in claim 13 wherein the transformer is enclosed by locating the transformer in a rigid transparent shell.

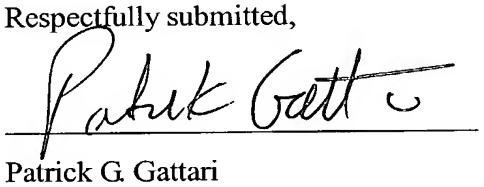
15. (Amended) A method as claimed in claim 14 wherein the transformer is located by providing a rigid transparent shell having a shape substantially the same as a general shape of the transformer; mounting the transformer in the shell so that a small clearance is defined between substantially a whole of an outer surface of the transformer and the shell; and filling the clearance with a transparent electricity insulating material.

REMARKS

The foregoing amendments merely correct formal matters and remove multiple dependencies in order to reduce the filing fees and to bring the claims into conformance with U.S. practice by removing multiple dependent claims that depend from multiple dependent claims. No new subject matter has been introduced by way of these amendments. A marked-up version of the amended claims is attached as Appendix A.

If there are any questions or comments regarding this Preliminary Amendment or application, the Examiner is encouraged to contact the undersigned attorney as indicated below.

Respectfully submitted,



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APPENDIX A

U.S. NAT'L PHASE OF PCT/ZA00/00140
Attorney Case No. 02-097

Marked-up Version of Amended Claims to Show Changes Made

1. (Amended) An electric assembly ~~(20, 50)~~ comprising a transformer ~~(30, 56)~~ and a translucent electricity insulating permanent cover ~~(31, 52)~~ therefor, to transmit heat generated by the transformer outwardly.

2. (Amended) An assembly as claimed in claim 1 wherein the cover ~~(31, 52)~~ is transparent.

3. (Amended) An assembly as claimed in ~~any one of the preceding~~ claims 1 wherein the transformer comprises a transparent bobbin ~~(22)~~ on which a core ~~(23)~~ for the transformer and transformer windings are provided.

4. (Amended) An assembly as claimed in ~~any one of the preceding~~ claims 1 wherein the cover is in the form of a skin ~~(38)~~.

5. (Amended) An assembly as claimed in claim 4 wherein the skin ~~(38)~~ comprises a transparent outer shell ~~(31)~~ of a rigid material and a layer ~~(37)~~ of a transparent filling material provided between the shell and the transformer.

6. (Amended) An assembly as claimed in claim 5 wherein the shell comprises first and second body halves ~~(32, 34)~~ fitted together to form the shell.

7. (Amended) An assembly as claimed in ~~any one of~~ claims 4 ~~to 6~~ wherein the skin comprises outwardly extending protrusions ~~(33)~~, to provide a clearance between the skin and a surface on which the assembly is mounted in use.

8. (Amended) An assembly as claimed in ~~any one of~~ claims 1 ~~to 3~~ wherein the cover comprises a plurality of pins ~~(58)~~ for mating with and making electrical contract with a conventional socket arrangement.

9. (Amended) An assembly as claimed in claim 8 wherein the transformer forms part of power supply circuitry ~~(54)~~, the power supply circuitry comprising a first output ~~(66)~~ which is accessible through the cover.

10. (Amended) An assembly as claimed in claim 9 wherein the power supply circuitry comprises a second output ~~(68)~~ which is in parallel with the first output and also accessible through the cover.

11. (Amended) An assembly as claimed in ~~any one of~~ claims 9 ~~to 10~~ wherein the circuitry comprises a fuse ~~(62)~~ and the fuse is provided in a recess ~~(60)~~ in the cover.

12. (Amended) An assembly as claimed in claim 11 wherein the cover comprises a lid ~~(64)~~ for opening and closing the recess.

13. (Amended) A method of forming an electric assembly, the method comprising the steps of:

- providing a transformer ~~(30, 56)~~; and
- permanently enclosing the transformer in a translucent electricity insulating cover ~~(31, 52)~~ which, in use, transmits heat generated by the transformer.

14. (Amended) A method as claimed in claim 13 wherein the transformer is enclosed by locating the transformer in a rigid transparent shell ~~(31)~~.

15. (Amended) A method as claimed in claim 14 wherein the transformer is located by providing a rigid transparent shell ~~(31)~~ having a shape substantially the same as a general shape of the transformer; mounting the transformer ~~(30)~~ in the shell so that a small clearance is defined between substantially a whole of an outer surface of the transformer and the shell; and filling the clearance with a transparent electricity insulating material ~~(37)~~.

U.S. NAT'L PHASE OF PCT/ZA00/00140

Clean Version of Amended Claims

1. (Amended) An electric assembly comprising a transformer and a translucent electricity insulating permanent cover therefor, to transmit heat generated by the transformer outwardly.

2. (Amended) An assembly as claimed in claim 1 wherein the cover is transparent.

3. (Amended) An assembly as claimed in claim 1 wherein the transformer comprises a transparent bobbin on which a core for the transformer and transformer windings are provided.

4. (Amended) An assembly as claimed in claim 1 wherein the cover is in the form of a skin.

5. (Amended) An assembly as claimed in claim 4 wherein the skin comprises a transparent outer shell of a rigid material and a layer of a transparent filling material provided between the shell and the transformer.

6. (Amended) An assembly as claimed in claim 5 wherein the shell comprises first and second body halves fitted together to form the shell.

7. (Amended) An assembly as claimed in claim 4 wherein the skin comprises outwardly extending protrusions, to provide a clearance between the skin and a surface on which the assembly is mounted in use.

8. (Amended) An assembly as claimed in claim 1 wherein the cover comprises a plurality of pins for mating with and making electrical contract with a conventional socket arrangement.

9. (Amended) An assembly as claimed in claim 8 wherein the transformer forms part of power supply circuitry, the power supply circuitry comprising a first output which is accessible through the cover.

10. (Amended) An assembly as claimed in claim 9 wherein the power supply circuitry comprises a second output which is in parallel with the first output and also accessible through the cover.

11. (Amended) An assembly as claimed in claim 9 wherein the circuitry comprises a fuse and the fuse is provided in a recess in the cover.

12. (Amended) An assembly as claimed in claim 11 wherein the cover comprises a lid for opening and closing the recess.

13. (Amended) A method of forming an electric assembly, the method comprising the steps of:

- providing a transformer; and
- permanently enclosing the transformer in a translucent electricity insulating cover which, in use, transmits heat generated by the transformer.

14. (Amended) A method as claimed in claim 13 wherein the transformer is enclosed by locating the transformer in a rigid transparent shell.

15. (Amended) A method as claimed in claim 14 wherein the transformer is located by providing a rigid transparent shell having a shape substantially the same as a general shape of the transformer; mounting the transformer in the shell so that a small clearance is defined between substantially a whole of an outer surface of the transformer and the shell; and filling the clearance with a transparent electricity insulating material.

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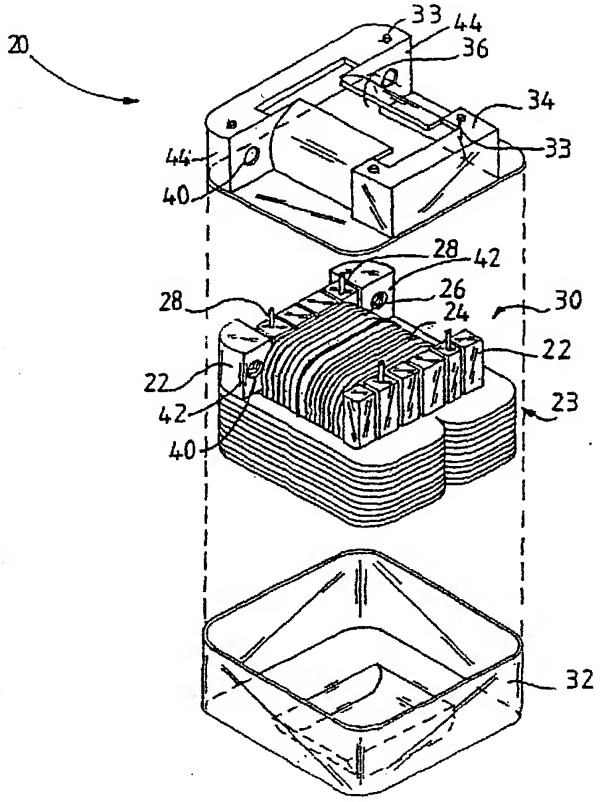
Published:
— *With international search report.*

[Continued on next page]

(54) Title: ENCAPSULATED TRANSFORMER



(57) Abstract: An encapsulated transformer assembly (20) comprises a transformer (30) enclosed by a transparent electricity insulating skin (32, 34). The transparent skin facilitates heat exchange resulting in more effective operation in use.

ENCAPSULATED TRANSFORMER

TECHNICAL FIELD

THIS invention relates to transformers and other apparatus comprising transformers, such as power supplies.

BACKGROUND ART

It is known electrically to insulate a transformer by centralizing the transformer in an opaque plastic cap having a substantially rectilinear shape and an open bottom and to fill the region between the transformer and inside walls of the cap with an opaque insulating material. The material normally forms a concave bottom wall in a region between the transformer and a bottom of the cap. In use, heat is generated by the transformer and since neither the cap nor the intermediate insulating material transmits heat effectively, that heat is not dissipated effectively. This may cause damage to the transformer or may at least give rise to higher electrical losses. This problem is also encountered in other apparatus comprising transformers, such as power supplies.

Furthermore, the aforementioned transformer assembly is normally mounted on a printed circuit board by a plurality of legs extending from electrical terminals on the transformer to a region beyond the aforementioned bottom

of the cap. The cap is normally mounted on the board to abut against the board and as a consequence, a cavity is formed between the board and the aforementioned bottom wall. In use and as a result of variations in temperature in the cavity, air-entraining moisture moves into and is trapped in the cavity. Over a period of time, this moisture causes damage to the printed circuit board.

OBJECTIVE OF THE INVENTION

Accordingly, it is an object of the present invention to provide apparatus and a method of producing same with which the applicant believes the aforementioned disadvantages may at least be alleviated.

SUMMARY OF THE INVENTION

According to the invention there is provided an electric assembly comprising a transformer and a translucent electricity insulating cover therefor.

The cover is preferably transparent. The transformer may also comprise a transparent bobbin on which a core for the transformer and transformer windings are provided.

In one embodiment the cover may be in the form of a skin.

The skin may comprise a transparent outer shell of a rigid material and a layer of a transparent filling material provided between the shell and the transformer. The shell may comprise first and second body halves fitted together to form the shell.

The skin may comprise outwardly extending protrusions, to provide a clearance between the skin and a surface on which the assembly is mounted in use.

In another embodiment, the cover may be in the form of a box and may comprise a plurality of pins for mating with and making electrical contract with a conventional socket arrangement.

The transformer may form part of power supply circuitry and the power supply circuitry may comprise a first output which is accessible through the cover. The power supply circuitry may further comprise a second output which is in parallel with the first output and which is also accessible through the cover.

The circuitry may comprise a fuse, and the fuse is preferably provided in a recess in the cover.

The cover may comprise a lid for opening and closing the recess.

Also included within the scope of the invention is a method of forming an electric assembly, the method comprising the steps of:

- providing a transformer; and
- permanently enclosing the transformer in a translucent electricity insulating cover.

The transformer may be enclosed by locating the transformer in a rigid transparent shell.

The transformer may be located by providing a rigid transparent shell having a shape substantially the same as a general shape of the transformer; mounting the transformer in the shell so that a small clearance is defined between substantially a whole of an outer surface of the transformer and the shell; and filling the clearance with a transparent electricity insulating material.

BRIEF DESCRIPTION OF THE ACCOMPANYING DIAGRAMS

The Invention will now further be described, by way of example only, with reference to the accompanying diagrams wherein:

figure 1 is a diagrammatic perspective view of a prior art transformer assembly;

figure 2 is a diagrammatic exploded perspective view of a transformer assembly according to the invention;

figure 3 is a diagrammatic perspective view of the assembly in figure 2, in assembled form;

figure 4 is a diagrammatic perspective view from above of a power supply assembly according to the invention;

figure 5 is a diagrammatic perspective view form below of the power supply assembly; and

figure 6 is a basic block diagram of the power supply in figure 4.

DESCRIPTION OF A PREFERRED EMBODIMENT OF THE INVENTION

A prior art transformer assembly is generally designated by the reference numeral 10 in figure 1. The assembly comprises a transformer (not shown) mounted in an opaque cap 12 defining an open bottom 14. A body of an opaque thermosetting epoxy resin 16 is provided in the cap to embed the

transformer, thereby to insulate it electrically and to mount it permanently in the cap.

Four conductive legs 18 connected to terminals (not shown) of the transformer extend beyond a concave bottom wall 17 formed by the resin and also beyond the open bottom 14 of the cap and are used to connect the transformer to external circuitry (also not shown).

The disadvantages of this assembly are referred to in the introduction of this specification.

A transformer assembly according to the invention is generally designated by the reference numeral 20 in figure 2. The assembly comprises a transformer 30 comprising a transparent bobbin 22 made of a suitable plastics material. A stack 23 of magnetic material laminates extend through and around the bobbin, to form the magnetic core of the transformer. The primary winding 24 and the secondary winding 26 of the transformer are provided on the bobbin in known manner. However, no insulating tape is provided about the windings, as is the case in some known transformers, and transformer assemblies. Conductive legs 28 are connected to input and output terminals (not shown) of the transformer 30.

The assembly further comprises first and second body halves 32, 34 of a translucent, preferably transparent permanent shell 31 (shown in figure 3) of a suitable rigid plastics material. The two body halves collectively form the shell having a shape and configuration substantially similar to the general external shape of the transformer 30. When assembled, there is defined a small clearance between the shell 31 and the transformer 30 enclosed thereby. Second body half 34 defines an opening 36 in a center region thereof.

When making the assembly and after the shell 31 has been formed by clipping body halves 32 and 34 together, a transparent thermosetting material is introduced into the shell via opening 36 to fill the clearance, to form a thin layer between the transformer and shell and to displace air inside the shell. The material may be introduced by means of a suction mechanism and process. The material is then allowed to cure.

The assembly thus comprises a thin transparent skin 38 (shown in figure 3) for the transformer constituted by the transparent layer 37 and the transparent shell 31.

On body half 34, a plurality of externally extending protrusions or feet 33 are provided. When the assembly is mounted on a surface (not shown) the feet ensures that there is a permanent clearance (also not shown) between the shell 31 and the surface. This clearance improves heat exchange between the assembly and the environment.

The legs 28 extend beyond the body half 34, so that the assembly 20 may be mounted on printed circuit boards (not shown) in well known manner. The feet 33 ensures that a permanent clearance is provided between the assembly and the printed circuit board, to facilitate circulation of air between the transformer and the board and which improves the dissipation of heat generated by the transformer.

It is believed that with the transparent bobbin 22, no insulation type about the windings (24, 26) and the thin transparent skin 38, heat generated by the transformer is transmitted outwardly more effectively than is the case with the aforementioned prior art transformers.

The assembly may define holes 40 in ear regions 42, 44, of the bobbin 22 and body half 34 respectively. These holes, which are easily accessible from a region in line with the centre axes of the holes, could be used to

mount the transponder on a chassis 46 by means of screws 48 or bolts and nuts, for example.

Accordingly, the compact assembly according to the invention is suitable for both so-called printed circuit board and chassis mount.

In figures 4 and 5, there is shown a power supply assembly 50 according to the invention. The power supply assembly 50 comprises a transparent or translucent cover in the form of a box 52 for power supply circuitry 54, comprising a transformer 56. The cover 52 facilitates the transmission of heat generated by the circuitry.

The cover comprises a plurality of pins 58 (two or three) for cooperating with a conventional socket arrangement (not shown) of a mains power supply network. In a base 52.1 of the cover, there is provided a cavity 60 for a replaceable fuse 62 connected in either a primary or secondary circuit of the transformer. The cavity is openable and closeable by a removable lid 64.

The cover defines a first opening providing access to a first pair of DC output terminals 66 from the power supply. A second pair of output

terminals 68 connected in parallel with the first pair is also accessible through the cover.

A block diagram of the power supply is shown in figure 6. The aforementioned pins are designated 58 and are connected to protective circuitry 70 comprising lightning protection circuitry and the primary winding 72 of the transformer. A secondary winding 74 of the transformer is connected to a voltage regulating circuit 76 and the regulating circuit is connected to the output terminals 66 and 68. The fuse 62 may be connected in the primary and/or the secondary circuit of the transformer.

It will be appreciated that there are many variations in detail on the apparatus and method according to the invention without departing from the scope and spirit of the appended claims.

CLAIMS

1. An electric assembly (20, 50) comprising a transformer (30, 56) and a translucent electricity insulating permanent cover (31, 52) therefor, to transmit heat generated by the transformer outwardly.

2. An assembly as claimed in claim 1 wherein the cover (31, 52) is transparent.

3. An assembly as claimed in any one of the preceding claims wherein the transformer comprises a transparent bobbin (22) on which a core (23) for the transformer and transformer windings are provided.

4. An assembly as claimed in any one of the preceding claims wherein the cover is in the form of a skin (38).

5. An assembly as claimed in claim 4 wherein the skin (38) comprises a transparent outer shell (31) of a rigid material and a layer (37) of a transparent filling material provided between the shell and the transformer.

6. An assembly as claimed in claim 5 wherein the shell comprises first and second body halves (32, 34) fitted together to form the shell.

7. An assembly as claimed in any one of claims 4 to 6 wherein the skin comprises outwardly extending protrusions (33), to provide a clearance between the skin and a surface on which the assembly is mounted in use.

8. An assembly as claimed in any one of claims 1 to 3 wherein the cover comprises a plurality of pins (58) for mating with and making electrical contract with a conventional socket arrangement.

9. An assembly as claimed in claim 8 wherein the transformer forms part of power supply circuitry (54), the power supply circuitry comprising a first output (66) which is accessible through the cover.

10. An assembly as claimed in claim 9 wherein the power supply circuitry comprises a second output (68) which is in parallel with the first output and also accessible through the cover.

11. An assembly as claimed in any one of claims 9 and 10 wherein the circuitry comprises a fuse (62) and the fuse is provided in a recess (60) in the cover.

12. An assembly as claimed in claim 11 wherein the cover comprises a lid (64) for opening and closing the recess.

13. A method of forming an electric assembly, the method comprising the steps of:

- providing a transformer (30,56); and
- permanently enclosing the transformer in a translucent electricity insulating cover (31, 52) which, in use, transmits heat generated by the transformer.

14. A method as claimed in claim 13 wherein the transformer is enclosed by locating the transformer in a rigid transparent shell (31).

15. A method as claimed in claim 14 wherein the transformer is located by providing a rigid transparent shell (31) having a shape substantially the same as a general shape of the transformer; mounting the transformer (30) in the shell so that a small clearance is defined between substantially a whole of an outer surface of the transformer and the shell; and filling the clearance with a transparent electricity insulating material (37).

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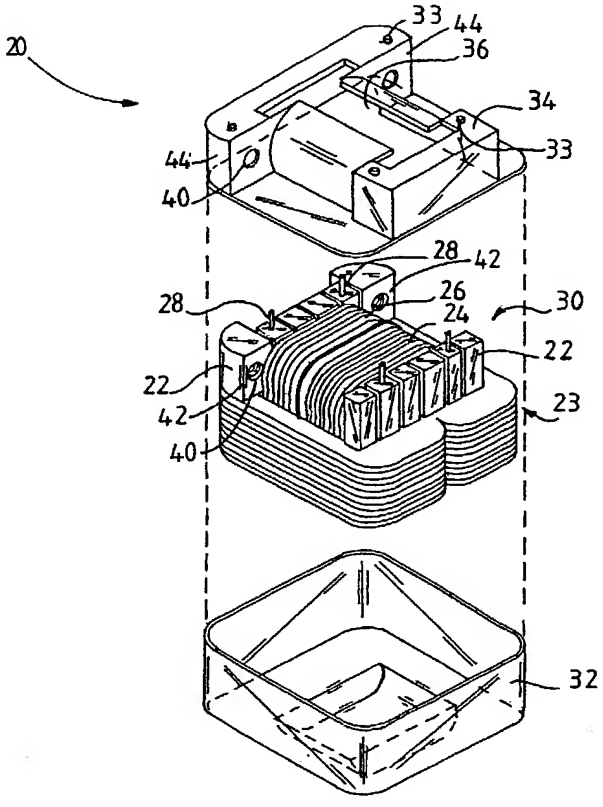
[Continued on next page]

(54) Title: ENCAPSULATED TRANSFORMER



(57) Abstract: An encapsulated transformer assembly (20) comprises a transformer (30) enclosed by a transparent electricity insulating skin (32, 34). The transparent skin facilitates heat exchange resulting in more effective operation in use.

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

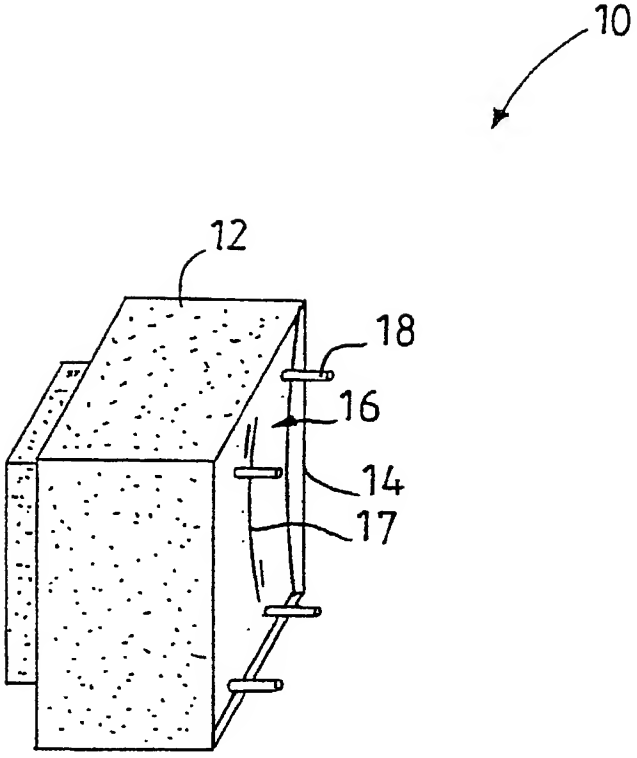

FIGURE 1 (PRIOR ART)

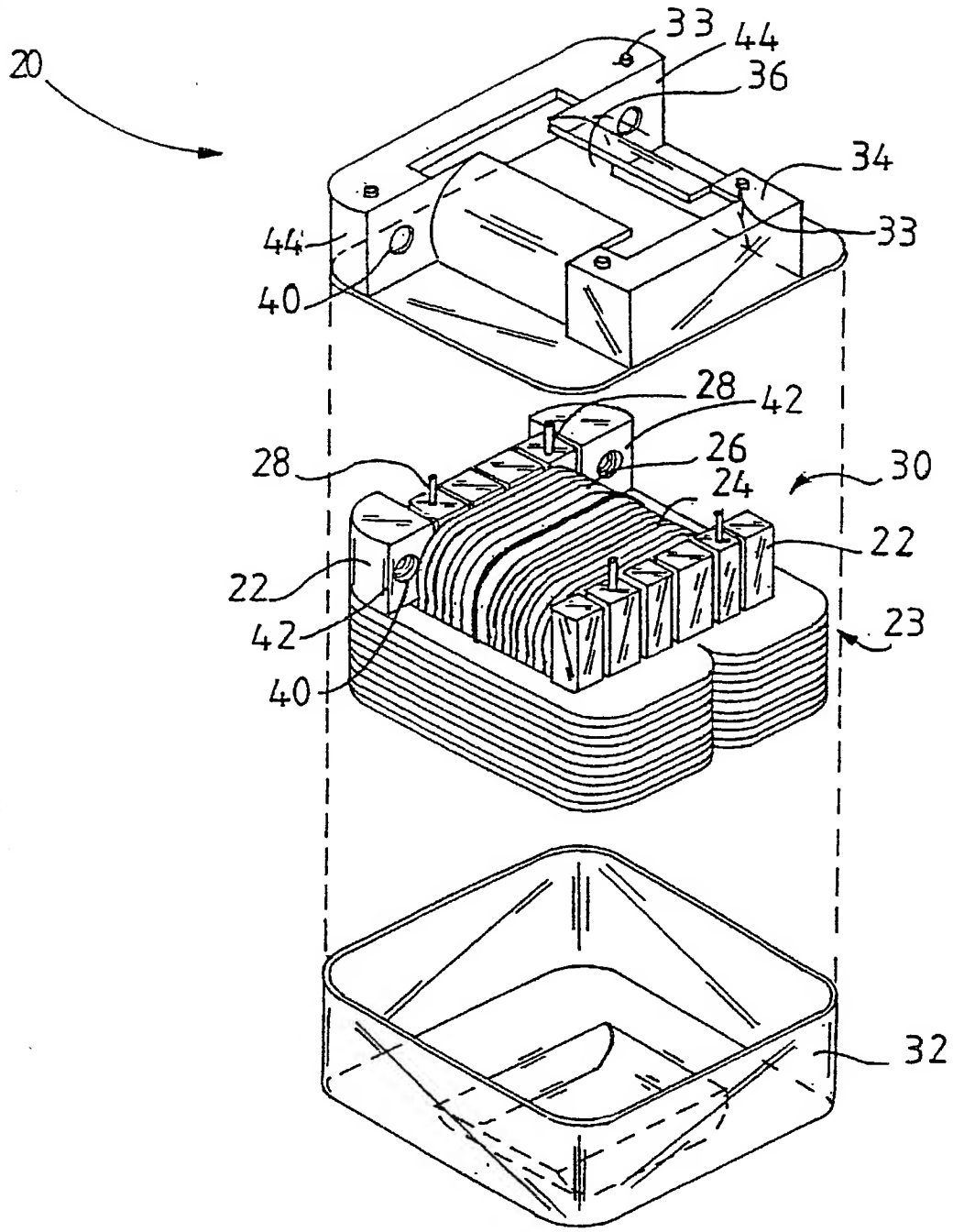

FIGURE 2

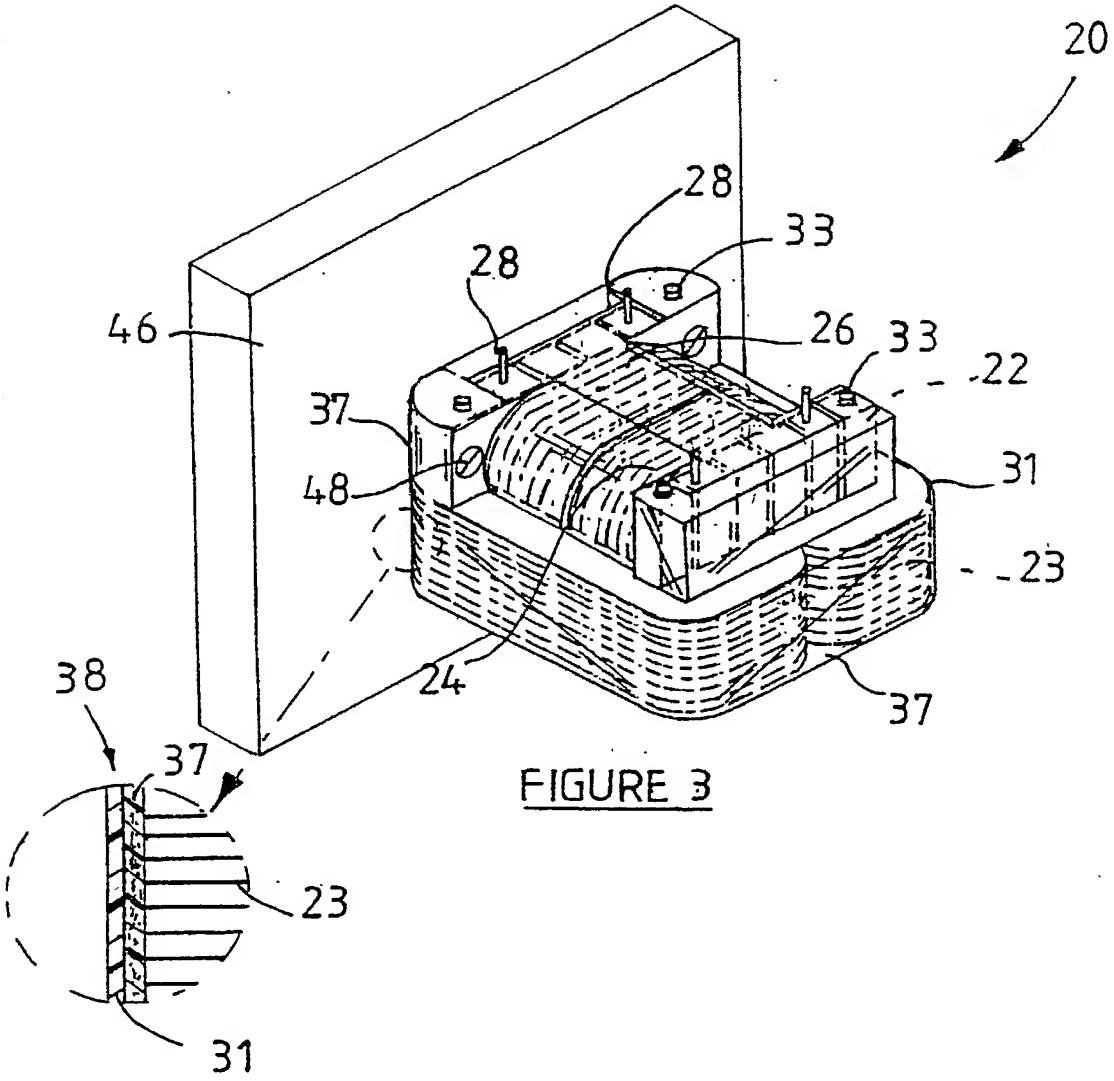

FIGURE 3

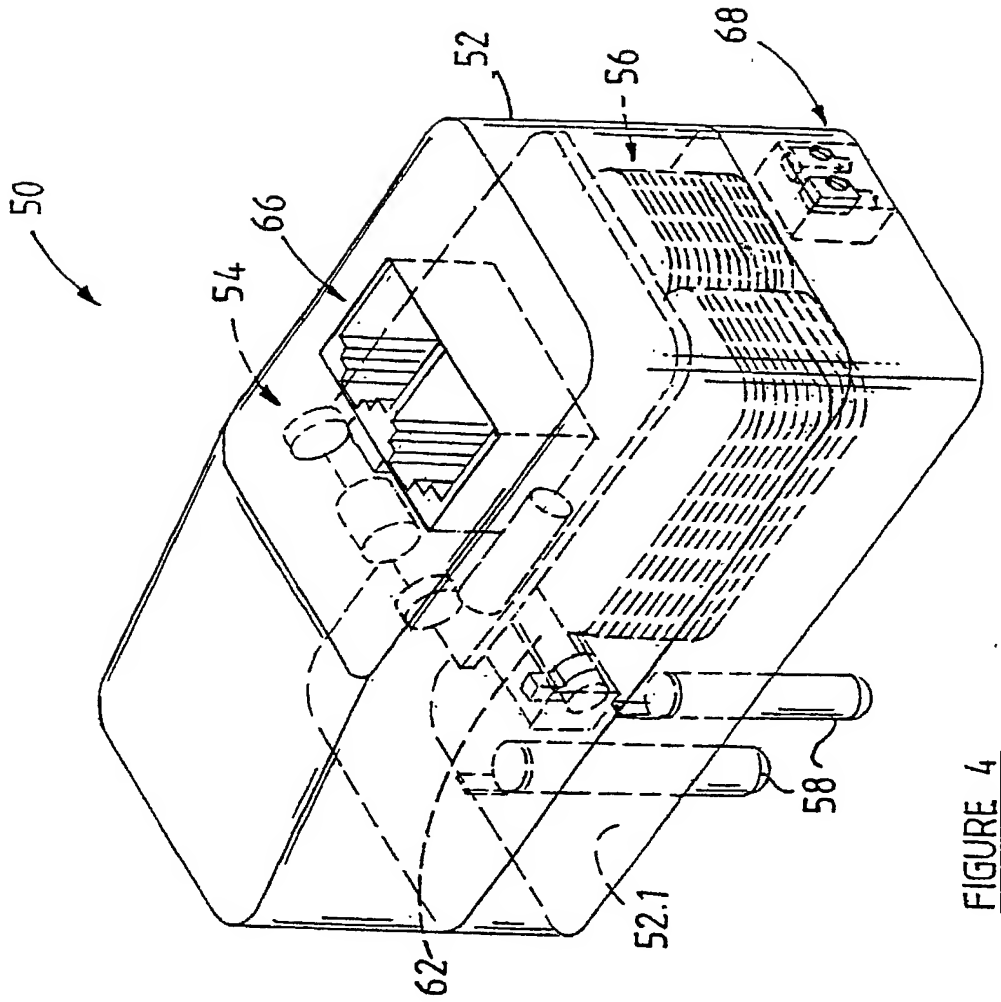

FIGURE 4

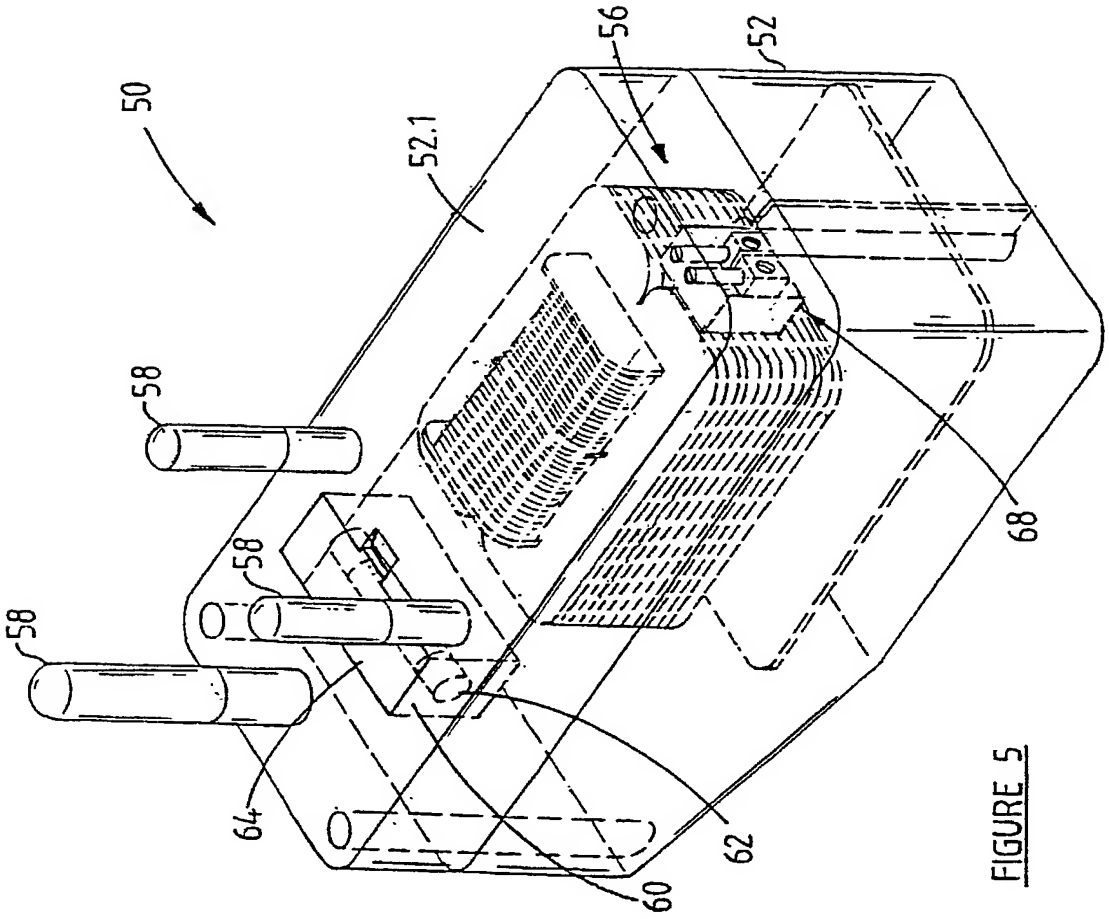

FIGURE 5

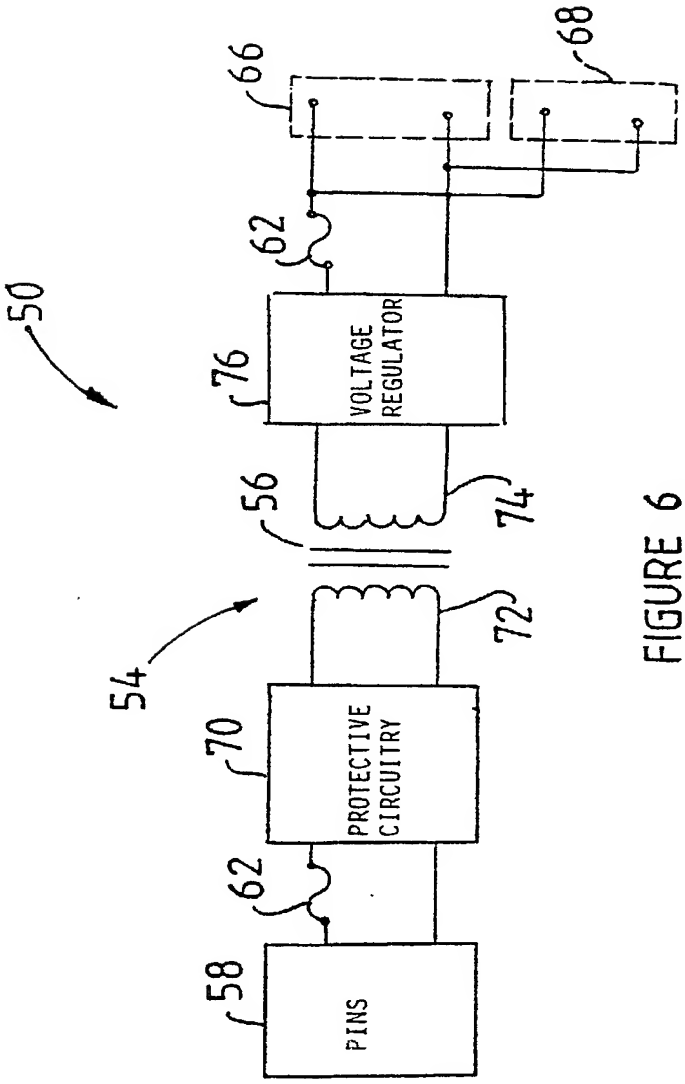
50
66
68
62
VOLTAGE REGULATOR
76
56
74
54
72
70
PROTECTIVE CIRCUITRY
62
58
PINS

FIGURE 6

Case No.: 02-097

DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

Encapsulated Transformer

the specification of which is attached hereto unless the following space is checked:

☒ was filed on February 19, 2002 . ✓

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR § 1.56.

I hereby claim foreign priority benefits under 35 U.S.C. § 119(a)-(d) or § 365(b) of any foreign application(s) for patent or inventor's certificate, or § 365(a) of any PCT international application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or PCT international application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application(s):

	Number	Country	Day/Month/Year Filed
1.	99/5296 ✓	South Africa ✓	19 August 1999 ✓

I hereby claim the benefit under 35 U.S.C. § 119(e) of any United States provisional application(s) listed below:

	Application Number	Filing Date
1.		
2.		

I hereby claim the benefit under 35 U.S.C. § 120 of any United States application(s), or § 365(c) of any PCT international application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT international application in the manner provided by the first paragraph of 35 U.S.C. § 112, I acknowledge the duty to disclose information which is material to patentability as defined in 37 C.F.R. § 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application.

	Application Number	Filing Date	Status: patented, pending, abandoned
1.	PCT/ZA00/00140 ✓	18 August 2000 ✓	pending
2.			

I hereby appoint the practitioners associated with the Customer Number provided below to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith, and I direct that all correspondence be addressed to that Customer Number.

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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